

**VOLTAMMETRIC SENSOR SYSTEM FOR THE RECOGNITION  
OF ENANTIOMERS OF PROPRANOLOL IN PHARMACEUTICAL FORMS**

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With the development of ideas about the role of stereoisomers in biochemical processes and the widespread use of drugs on their basis, it became clear that along with the simplicity of sample preparation, availability and cheapness of devices, analysis time, the applicability of analytical methods will largely depend on their ability to recognize the optical isomers of active substances.

In this paper, we studied the possibility of using voltammetric sensors and a sensor system based on glassy carbon electrodes modified with polyarylenephthalide composites with melamine, cyanuric acid and  $\beta$ -cyclodextrin to recognize the enantiomers of propranolol in dosage forms containing auxiliary substances. Using the chemometric method of principle components analysis it was shown that in order to reliably recognize the enantiomers of propranolol, it is necessary to take into the entire voltammetric curve.

The possibilities of a voltammetric sensor system based on polyarylene phthalide modified with composites with melamine, cyanuric acid and  $\beta$ -cyclodextrin of glass-carbon electrodes for express recognition of propranolol R- and S-enantiomers in pharmaceutical forms with various auxiliary substances content (lactose, sucrose, starch, talc and calcium stearate). The influence of the content of the main component and auxiliary substances, the conditions for recording voltammograms on their characteristics, the probability of recognition of the enantiomers of propranolol in pharmaceutical forms is estimated.

To study the sensitivity of the developed sensors, measurements were made in a series of solutions of enantiomers of propranolol with a known concentration in the range 0.005–1.350 mM. The calibration function was linear in most cases in the range from 0.021 to 0.675 mM, the detection limit in solutions of enantiomers  $(5.28\text{--}8.37)\cdot 10^{-6}$  M, in pharmaceutical forms  $(1.17\text{--}5.37)\cdot 10^{-5}$  M.

Thus, the developed enantioselective voltammetric sensors based on polyarylene-phthalide composites of  $\alpha$ -,  $\beta$ -cyclodextrins, melamine and cyanuric acid are sensitive to enantiomers of propranolol in multicomponent solutions containing auxiliary substances of ready-made pharmaceutical forms. It has been experimentally proved that the use of an array of cross-sensitive chemical sensors in combination with chemometric data processing makes it possible to recognize the enantiomers of propranolol with a probability of not less than 90 %. This allows them to be used for the rapid analysis of dosage forms without separating the constituents of their ingredients, which is preferable, as this reduces the losses of the analytes, reduces the number of operations, the analysis time and the consumption of reagents.

*This work was supported by the Russian Science Foundation: Grant No. 16-13-10257.*